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Ecological Determinants of Chieftainship among the Yaruro Indians of Venezuela

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I

Father John Cooper is said to have remarked once that when South American Tropical Forest tribal chiefs order their people to do something, the people immediately do as they choose. Certainly, as a general pattern of chieftainship, this is true among many groups,[1] and the Yaruro Indians of the south-central Venezuelan llanos are no exception. Among them, as with others, the very word chieftainship seems inappropriate. We shall use the term here, but it should only be understood as a convenience for designating our subject matter. Whether, in general, the functions of chieftainship in South America vary in importance as ecological conditions require differing chiefly activities, or whether chieftaincies were created or reinforced through the structure of statuses engendered in acculturation situations, as seems to have occurred in parts of Venezuela, or whether the varieties of chieftainship represent different evolutionary phases of development responding to the general conditions of the culture in which they occurred, is not yet clear. Presumably some consistent set of factors may be found, perhaps along the techno-ecological lines suggested by Sahlins or Harris[2] or the socio-economic conditions such as warfare suggested by Carneiro[3], which will serve as principles in the explanation of the tropical South American and other chieftainships of similar characteristics, such as some of those found in Melanesia. It is hoped that the following interpretation, largely dealing with the ecological foundations of chieftainship, will contribute towards this formulation of principles.

II

Briefly, Yaruro chieftainship is characterized by its ineffectiveness. The *capitan*, as he is called in Spanish, or *o'te-ta'ra* (elder head) in Yaruro, rarely commands. When he does, the commands most often are directed at children and young people, especially males, women, on the whole, being consulted not commanded. Most direct

[1] E. g. Akawaio, Barama River Carib and other Carib groups, Canella, Carajá, Cayapó, Kiukuru, Sherente, Tauliping, Waika, etc. Cf. Lowie, 1949, especially pages 341—350.

[2] Harris, 1958; Sahlins, 1958.

[3] Carneiro, 1961.

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Most direct

commands, in so far as I was able to observe, were made in Spanish![4] — essentially in acculturation contexts. In general, they concerned village care, small services, and the like. No occasion was observed of commanding older men, except for a married youth of 19, who was the youngest adult male in the village. The two or three commands he received during my stay went unnoticed, and, in one or two instances, were even directly contravened. The capitans of the Cinaruco river group and of Palmarito de Guachara both consistently complained that no one paid enough attention to them, and the Palmarito chief complained that he never was kept sufficiently informed of events by his people. The fact is that people do pretty much as they choose in all important decision-making situations which do not involve the community at large, or the relationship of some member of the community or the entire group to outsiders.[5] In the former situation, the chief serves as a consultative funnel through which the community discussion pours back and forth until the community achieves some clear but unstated consensus upon which community members can act, individually of course. Only in the situations dealing with outside groups does the Yaruro capitanship emerge as a more developed status which might metaphorically be described as a position similar to that of a minister of foreign relations. In behalf of his group, he talks with any representatives of outside groups, especially if they are non-Yaruro, and acts as gatherer of information and as channel of communication between the community and the outside entity. Even this is weakened, however, since it applies more by courtesy than by fact among the Yaruro themselves, and other members of the community may perform the same function even if to a somewhat smaller degree. It is also weakened in that no Yaruro is prevented from acting on his own with respect to non-Yaruro outsiders, and, in fact, many Yaruro do establish their own relationships with outsiders as a number of instances attested. Indeed, the rights of the individual members of the society to make their own decisions, at least internally if not also externally, is insisted on. In one instance, a chief who took it upon himself to

[4] Commands and other stress situations, which generally appear to be uncongenial to the Yaruro and more overt as the people have been more subject to acculturation, seem to elicit from the Yaruro Spanish responses rather than Yaruro ones. It is as though it were not fitting to utter commands or express anger in Yaruro. Thus, the few times noisy altercation was heard among the Cinaruco Yaruro, the language used was Spanish. The chief's commands and his overt anger were always expressed in Spanish, even if he had just before been speaking in Yaruro. Though anger may often be felt, it is not shown if the participants are expressing themselves in Yaruro. Thus, the chief scolded one of the village boys for riding one of the recently acquired burros — in Spanish; he ordered a 19-year old young man to do some task — in Spanish; he complained of the actions of one of the village elders in taking on the job of guide without first consulting him (though he would certainly have permitted it) — in Spanish.

[5] Cf. Leeds, 1960 a, with respect to the place of individual action in Yaruro society. Though there is individual action, choice, and responsibility, these are all carried out as an aspect of community organization and essentially with community affirmation. A person is not an individual set in counterpoint to his society — there is no polarity of individual-society, as we, in our culture, generally seem to conceive. Individualism in the latter sense does not exist among the Yaruro. The Yaruro should not be mistaken for an individualistic culture, as, I suspect, several of the cultures described as individualistic in Mead, 1937, should not have been.

represent his people to the outside world without consultation and to make arbitrary decisions for them inside the community — mainly in his own interest — was, with the consent of the community, assassinated by one of the members, now in excellent standing in that community as a respected shaman. The chief in question had stepped beyond the bounds designated for his status. In sum, the position of chief, even though formally recognized by Yaruro society and reinforced by formal recognition and appointment by Venezuelan authorities, is feeble as an institution and as a status.[6] It is our hypothesis that ecological conditions of Yaruro life determine the form of the chieftainship in such a way that its stronger institutionalization would be impossible, and we turn to this question now.

III

Yaruro subsistence activities[7] comprise swiddening, gathering, pig herding, hunting and fishing, mentioned in the order of their importance as contributors to the total food supply as measured in calories.[8] Horticulture probably provides 60—70% of the total annual food supply. The horticulture practiced is characteristic of tropical forest slash-and-burn gardens, with a slow rotation of plots in order to permit soil renewal and weed control. Trees are cut, at present with steel axes and formerly, apparently, with axes of bone or shell, and then burnt. Occasional fences are roughly made of the logs to keep out pigs. Bitter manioc (*Manihot stilissima*),[9] in several varieties, is the main crop, though sweet manioc (*Manihot aipi*), also in several varieties, is planted too, as are corn, bananas, sugar cane — each in several varieties — and a number of lesser crops such as melons, squashes, pumpkins, pineapples, sweet potatoes, and yautia or ocumo (*Xanthosoma sagittifolium*). Crops are planted with a digging stick which may also be used in harvesting. Gardens are weeded, once only, early in the growth of the crops. Other than clearing, the only soil preparation is the construction of hills for planting bananas. This is done by burning hills made by a certain species of ants (*buachaquero*). The hills, which are quite wide and low, are filled with organic matter enriching the soil.[10] Harvesting is aided with baskets for carrying the crops. Baskets contain about half a bushel or less. No fertilization, no terracing, no drainage, no irrigation, no extensive turning of the soil is done.

The gathered resources include a number of roots, particularly changuango, changuanito, and guapo (*Marante arundinacea*);[11] varied fruits, especially that of

[6] Professor Benjamin N. Nelson informs me that in medieval Spain, village communities had an official, also called *capitan*, whose function was to treat with state functionaries representing the world beyond the village community's frontier. It is possible that the Yaruro capitan, and many others in Venezuela, are an acculturative transfer of this office to tribal groups. In the case of the Yaruro, this would have happened some 250—300 years ago.

[7] The use, here, of the terms 'activity', 'tasks', 'techniques', 'tools', 'resources', and 'habitat' corresponds to the definitions given in Leeds, 1960 b.

[8] Cf. Leeds, 1961, which gives this data in detail and describes the habitat and horticulture *in extenso*.

[9] Native terms for these crops are given *ibid.*

[10] *Ibid.*, note 9, contains data on soil values.

[11] Identifications are from Pittier, 1926.

222 the moriche palm (*Mauritia flexuosa*); several seeds, notably chiga (= chigo?; — *Campsiandra comosa*); calabashes (*Crescentia Cujete*), and bees' wax and honey. Non of the items gathered are large in size or difficult of access except the bees' wax, one or two of the fruits, and calabashes which grow on higher trees, or may be very far. Gathered foods may be picked up by hand or with the aid of a digging [412] stick or machete, and may be brought back in the harvesting baskets. Other items [415] which may be gathered include the raw materials for baskets and mat-making or for food-processing tools such as the tipiti, pots, or mortars and pestels. These 824 items include the fronds of the moriche palm, used for making cord, baskets, tipi- [285] tís, mats, and sacks; in some villages, clay for pots; reeds for arrows, wood for [323] house beams, mortars and pestles, bows, and for cooking utensils. Wood, palm fronds, and many other items are gathered with the help of the all-purpose machete.

231 Pig herding is unsystematically done. The pigs, a recent acquisition, spend most of their time at will in the foraging grounds. The significant herding activity occurs only at times when one or another of the groups of pigs breaks into the gardens, an almost daily occurrence. They are then driven to the foraging grounds again, or if late in the day, into a close till morning when they are either driven forth again or allowed to scavenge in the village. There are several herds of pigs of sizes varying from perhaps a maximum of 20 including piglets to the more usual six or eight animals. The only tools used in pig care include a slaughtering [442] stick with which the pig is clubbed to death and knives to cut up the meat. The [262] close is built of logs cut with a machete and carried in by one or two men. Pig meat, though eaten with regularity, is definitely a secondary element of diet.

411 Hunting is done almost exclusively with the bow and arrow. There are several types of arrows. One for fish has a metal point approximately 4 inches long with a side hook about five inches from the tip, where the tip is set into the shaft. This may also be used for smaller animals. One for birds has a blunt wooden head, and does not appear to be used very often. A third type is used for larger animals such as deer and capybara. It has a blade about 6 inches long shaped like a laurel leaf and, at present, made of steel. At the base of the blade, a small cross-piece is affixed in order to prevent the precious blade from piercing so deeply into the animal that, if it escapes, it would carry the arrow away with it. The fourth type of arrow is used for turtles, tortoises, and alligators or other animals which submerge. The head is short and strong with a sharp recurved hook. The entire metal head is attached to a cord, and this in turn is attached to the arrow shaft, from which the head is detachable. On detaching, the shaft floats and the game can be followed in its underwater course. The bow is generally about 6 feet long or a little more. It is made rather crudely of the wood of the macanilla palm (*Bactris Gasipaes*). Some animals, especially land tortoises and armadillos, may be caught [136] by hand. Alligators may also be hunted with exceedingly heavy steel hooks and [324] a strong line. In hunting, no traps, nets, surrounds, or drives are used.

226 Fishing is done chiefly with bows and arrows, though an arrow may sometimes be used as a spear, repeatedly jabbed into grassy waters near the river banks. Fishing may also be done with hooks and lines of different sizes. Bait is also used. A man may fish from a platform built by lashing logs horizontally to two trees

and then shooting into the still side pools of a stream into which he has driven a post with bait attached. He may also stand in a canoe to shoot. It is reported, though I have not myself seen it, that barbasco (*Jacquinia revoluta* or *macrosulata*) poison is used by some Yaruro.[12] No nets, weirs, traps, sweeps, or artificial fish pools are used.

Given the techniques and tools of the Yaruro, all the subsistence activities described can conveniently be done by one person. Some *must* be done by one person only, since the tools and techniques themselves do not permit two or more persons to operate jointly. As it were, the logic of the tools and techniques concerned demands utilization by single persons.[13] Some of the tools and techniques might conveniently involve two or more persons, e. g. lashing tree trunks together to make a fence or cornering a capybara, but do not definitively *require* more than one person. Activities of all sorts may be done by aggregates of persons, each utilizing his own tools and techniques individually but neither the activity, the tools nor the techniques entail the aggregation of individuals. Thus, from the point of view of human organization, the technology, by itself, entails no managerial functions, no coordination of tasks which must be overseen by someone occupying an appropriately defined status.[14] That is, there are no technologically determined positions of leadership in Yaruro society. Further, the technology as such entails no significant cooperation in work organization, even when this is convenient, and correspondingly, no standard work groups or management functions, as represented in some defined status, for facilitating cooperation are to be expected or to be found. In fact, Yaruro techoology and resource distribution are such as to elicit considerable dispersion of activities and actors at any given time of work, and to inhibit the development of rank and the personal acquisition of superordinating prestige.

IV

We may now examine the habitat aspect of the ecological relationship. A clearly marked annual cycle occurs in the Yaruro habitat.[15] However, despite a sharp seasonal change from heavy rains up to 60 inches in one half of the year to almost

[12] Personal communication from Mr. Thomas Rootes who has studied Yaruro linguistics for a number of months, having visited several groups.

[13] Different kinds of tools require different kinds of organization. A simple hand saw can be used by only one person at a time. A logging saw, though it can awkwardly be used by one person, is surely best used by two persons. Certain other saws, e. g. jig saws, make up one of a series of machine processes on a single part of a product, the entire series being the unit of operation which requires a still more complex level of organization. Cf. Leeds, 1960 b.

[14] For the structure of argument which is involved here, see Leeds, 1960 b.

[15] 'Habitat' here refers to all physical objects and conditions of the environment which are relevant to the existence or production of resources as defined by the culture. For the most part, then, 'habitat' refers to those environmental conditions such as humidity, temperature, insolation, rainfall, etc., which affect the food supply, as well as the food and water available for animals and plants and other culturally relevant physical objects. By extension, it refers to daily, seasonal, annual, and long-term variations and cycles in the various relevant factors of the environment, whether climatic, geologic, or biotic, which affect any of these supplies.

desert-like conditions in the other, temperature, sun, soil, and water-table conditions are such that plants will grow all year round, supplying a steady flow of vegetable foods to the people. The change of the water level in the rivers and in the water-table and the sharp increases and decreases of rain strongly affect the patterns of animal and plant life in the Yaruro environment. Annual cyclical variations in wind, humidity, and temperature are also quite marked. Plants and most especially animals, experience a kind of seasonal pulsation. As the rivers fill during the rainy season, the larger animals, such as the cayman, alligator, manatí, and dugong, move upstream to somewhat shallower waters, where their food supply is easier of access. Fish also move upstream and even up small brooks, where this is possible. If the savannas flood, many fish swim out into the savannas where numerous insects and other foods are now to be found. The insects themselves multiply and are distributed farther and farther back from the rivers as the rains progress and the savanna floods widen. Meanwhile, foraging animals move farther from the rivers and ponds, and range over greater distances as the rains and the elevated water-tables foster greater plant food resources. Insects in part follow the animals, in part the vegetation as it wakens to winter life in the interfluves. As the dry season begins to return, the reverse process takes place, and all life concentrates nearer and nearer the permanent waters such as the big rivers and some lakes, or at points where the land surface is near enough the permanent water-table to maintain some vegetation, notably the gallery forests and the woodlots, called *montes* in Spanish. Thus one may ideally describe a summer and a winter organization of the habitat. The incidence of resources varies accordingly, and consequently so do the technological activities and tasks to be done. In the dry season, there is a marked increase of gathering, particularly of roots and seeds which appear to store starches for dry season use in the wet season, whereas fruits appear mainly in the rainy season. Hunting increases in the dry season when animals are more highly concentrated in and near the rivers and tributary brooks and streams. Fishing also increases in the dry season as the waters become shallower, less grass-choked, and no longer laden with muds from upstream erosion which makes it impossible to see the fish. Garden production appears to decrease in summer as the dry season precludes growing some crops, such as pineapples, altogether, and reduces the possibility of growing sugar cane and corn.

Despite this marked seasonality, the habitat conditions of both seasons resemble each other in certain formal respects vital to our argument.[10] First, at any given moment of either season, from the point of view of work organization, the resources are what we may call dispersive. Thus, in mid-rainy season, swiddens are to be found dispersed along the streams and brooks flowing into the rivers and these adits are distributed irregularly over the land within a distance of 4—5 miles of the river. Even low slip-off slopes of the river may be used for growing sugar cane in the wet season, though they are too dry in the dry season. Game, such as tortoise, armadillo, deer, birds, and occasional other animals, are to be found throughout the savannas and about the river banks. Fish are found in most streams and in the rivers including those which have no useful banks for horticulture.

[10] Cf. Leeds, 1961, for further details and maps of the seasonal resource locations.

Gathered resources are found near the streams in marshy places where the moriche palm grows, and to a lesser extent in the savannas.[27] The dry season resources are also distributively located though the pattern is somewhat different. Quotas of production from these resources at any one time are rarely great. The larder, as it were, must be filled from a number of sources at once, even though one crop, particularly bitter manioc, and occasionally sweet manioc and corn, may rise briefly to as much as 50 or 60% of the food supply. Thus the available quotas of resources and their distribution at given moments in time are such as to demand a distributive form of labor organization: workers, as individuals or in very small groups, must go off in different directions at the same time. The obverse of this, of course, is that no sizable or permanent working groups are to be expected and none in fact occur. Further, because a dispersion of the labor force and a constant flux in the constitution of work groups is entailed by the relationships between the technology and the habitat, organized and permanent managerial functions can scarcely occur, and no fixed status with significant managerial powers would be expected. The observed data of leadership among the Yaruro and many other tribes in South America and other parts of the world, such as Melanesia, having fundamentally similar ecologies, corresponds precisely with what one is led to expect logically from the form of the ecology.

The absolute size of work groups achievable in the Yaruro habitat is limited not only by the dispersed locations and temporal harvest patterns of resources, but also by the absolute productivity of the ecology. If one calculates the distribution per land area of those calories potentially convertible to human energy, the rate of calories per unit of land surface is so low that even at maximum utilization only a very low population density of about 2 persons per square mile would be possible. If concentrated in the center of an effective walking distance for exploiting resources of, say, six miles radius from a village, with a resultant total area of about 110 square miles, there would be about 220 souls. Of these, perhaps 70% (all persons over age 10), at maximum, might constitute the labor force, i. e. 154 adults and older children. The actual conditions are, of course, much more limiting, since the efficiency of the technology is such that it cannot exploit the totality of calories potentially available for conversion to human energy at any one time.[28] The actually harvested calories are considerably less, though I have no estimates as to how much less. Let us estimate half, or enough to support one person per square mile, that is, 110 persons. With a somewhat smaller per cent of the population available for the labor force, say 60% of the 110, the force would have only about 67 persons at most. This appears to be a reasonable number for the Cinaruco Yaruro groups, although due to depopulation from disease and mas-

[27] *Ibid.*, Map I.
[28] *Ibid.*, Map II.
[29] For example, all the fish available in the streams at a given time cannot be caught. More could be caught with an improved technology, such as the use of fish traps, weirs, or fish poisons, which, as we have said, are absent from the technology of the Cinaruco Yaruro. Density of fish, or any other biotic population, can be estimated (cf. Dice, 1952, Ch. IV), and then compared with rates of harvesting. Furthermore, it should be noted that often the totality of an actually harvested resource may not be available. For example, in

acre, the labor force actually observed in "my" group was a little more than 25% of that number, or 18, and neighboring groups were generally still smaller. These 154, 67, and especially the actual 18 workers, even if, at any given moment, *all* were working at subsistence activities, would be distributed over various parts of the 110 square miles of territory under the kind of dispersive habitat and technological conditions described. They are in fact so thinly scattered as to preclude any sort of continuing managerial functions.

V

A consideration of the forms of the harvest surplus[89] is relevant to our discussion. Harvest surpluses must be considered with respect both to individual subsistence resources and to all subsistence resources taken together. In the annual cycle, there is considerable variation in the amount produced of any given crop, except for sweet and bitter manioc which together constitute perhaps 40% of the annual food supply of the Yaruro. Manioc produces throughout the year. Given that the manioc-growing areas are widely dispersed and that considerable labor is drawn from manioc areas by still more dispersed resources, it follows that most work units for manioc gardens will consist of only one or two men, each having their own swidden or sharing it with one or two others to supply themselves and their immediate families throughout the year. As might be expected, land tenure and land usage patterns are in accord with this inference. Occasionally small oscillations in the manioc crops may produce small harvest surpluses. These, at least nominally, belong to the man in whose swidden they grow and are his for disposal. The quantities, however, are exceedingly small, and present no problems of storage or disposal necessitating more centralized supervision and allocation. Most other resources display a similar pattern though to an even smaller degree. Fish are obtainable, for the Cinaruco Yaruro, all year round with almost equal ease, though the Palmariteños have a more difficult time because of the grassy and muddy waters in the rainy season. Hunting windfalls and large pigs are the only animal sources which present harvest surpluses of any size. However, these are small enough so that they last at most two or three days, and they are so irregular both as to occurrence and as to personnel involved that no regular centralized institutional mode of handling them is entailed. The virtual absence of meat storage

[89] The Trobriand Islands, in a good year, all the yams harvested cannot be eaten at once, nor can they be stored. Some portion of the crop is then lost by spoilage. We may construct, in terms of calories or other significant food values, two ratios:

$$\frac{C_h}{C_p} \qquad \frac{C_c}{C_h}$$

C — Calories
c — consumed
p — potential
h — harvested (= available for use)

The first may be used as a measure of the efficiency of the productive capacity of the technology; the second as a measure of the efficiency of the distributive capacity of the technology.

[89] The technological, producers, and harvest surpluses are defined in Harris, 1958, and implied in Harris, 1959. They are dealt with in detail with respect to the Yaruro in Leeds, 1961. Other relevant discussions of surplus are found Sahlins, 1958; Jacobs and Stern, 1952, Ch VI.

also inhibits any such development because it forces the immediate distribution of most of the meat of the slaughtered pig or captured game. There is no constantly or repeatedly stored supply to be supervised or allocated. In fact swine and windfall game, properly considered, correspond to the small oscillations of the manioc supply and are totally different from the regularly occurring massive incidence of food sources like buffalo herds, salmon runs, and wheat harvests of temperate climates or crab runs in the tropical Orinoco delta of Venezuela.[21]. Of all the food resources, the only one with a marked harvest surplus is corn. The significance of even this harvest surplus is reduced by a) the smallness of the quanta involved relative to the total food supply, and b) the fact that there are two corn seasons, one beginning in June, one about the beginning of February. Temporary harvest surpluses of corn may, however, contribute slightly to the enhanced prestige of those individuals who by their own will and work have been most productive.[22] They say with appreciation, "He is a hard worker", but the prestige is relevant only to the sphere in which it is gained. It does not necessarily give him prestige in some other spheres of cultural life, such as, for example, the ceremonial or decision-making activities.

In taking an overall view of the food resources, it will be noted that there are no clear harvest surpluses, and that the oscillations in supply, which are in truth minute and momentary harvest surpluses, are so small and irregular and varied in location as to be insignificant determiners of managerial functions. At most one might expect the harvest surplus of corn to elicit some small allocative function, generally none. Storage, too, in this case, is not a technique requiring administration as with wheat in grain elevators. It would in fact be better to consider this kind of storage as a steady presence of food rather than as storage at all, even though it functions as such.

The extra labor requirements of these small upward oscillations of the harvest surplus are likewise, in general, indistinguishable from regular labor requirements and are easily absorbed by individual workers. Or a worker may take along a child, who goes as much for the fun of being with his father or grandfather, but nevertheless carries back some produce. This type of situation is in sharp contrast with, say, the labor requirements of a large harvest surplus like the wheat crop in the United States which demands a large amount of labor quickly and temporarily. Such a harvest surplus entails a number of organizational problems foreign to the harvest oscillations.

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[21] Personal communication from Johannes Wilbert who has done extensive fieldwork with the Warrau in the Amacuro Delta of the Orinoco River.

[22] Yaruro individuals differ in productivity not only because of inborn qualities such as strength and native abilities, but also by choice based on tastes. Some do not like to grow corn, others do not like to grow pigs, others still prefer to hunt or trade. The food quanta produced by these several activities vary greatly. The individual may exercise these choices in a cultural setting where any such choice benefits the community. All produce eventually finds its way into the community at large through the distribution mechanism. The person is not acting as an individualist regardless of the interest of others, but at his own optimum, given his unique person, in the community as a whole. Cf Fn 3 *supra*.

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221 262 Finally, the Yaruro deny any considerable long-term oscillations in the environment and consequently in the resources. The extremes, particularly the minima, of habitat factors which regulate food and population balances, according to Liebig's Law, fall within narrow limits and again elicit no special institutions of management or of equilibrium maintenance to compensate for them, as in the case of the potlatches of the Northwest Coast of America, the buffalo hunts in the Great Plains of the United States, or the use of pigs in Melanesia. [22]

VI

868 One more point may be made regarding the ecology as limiter of chieftainship among the Yaruro. The tools, techniques, and resources require no very extensive, highly specialized or esoteric knowledge. In fact any man or woman, and any child as well, has access to such knowledge, and it is easily acquired by all members of the society who thus have, at least potentially, equal access to control over the means of life. There is no specialized knowledge, at least with respect to technology and habitat, which requires a specialized repository in the form of a chief or learned person. Yaruro knowledge, itself dependent upon the inventory of tools, techniques, and resources, inhibits any tendency towards the development of any [463] sort of specialists in technical or managerial knowledge. As one might expect, there are no true specialists in Yaruro society. Here and there women make pots and certain women seem to have a special bent for making woven sacks but these [756] are not properly specialities. Nor, from a technological or ecological point of view, is male or female shamanism in any way a speciality. They do not appear to be specialists even in esoteric knowledge. Knowledge of the general type described here might be called 'dispersive' or 'egalitarian' since it tends to become more or less uniformly distributed among the members of the society. A consequence of the existence of this type of knowledge, associated with the kind of technology described, is that there will be no specialised training of any specialists and, of course, no specialised personnel to do such training. This is the situation which obtains among the Yaruro both with respect to technical and managerial activities. Thus, in Yaruro knowledge, there is no source for the support of an institutionalized and strong chieftainship.

VII

221 241 361 622 In one respect, the ecology encourages chiefly functions. A balance is struck between the cultural resources, the possibilities that the habitat affords for their production, and the length of time that areas of land can be exploited. This is particularly true of the horticultural lands since they can no longer be used after three years of cropping, and it becomes necessary to move on. The result is that there is a slow migration of resource areas, chiefly of horticultural areas across the tribal territory. The lands in cultivation move further and further from any given village until a point of suspension is reached at which the walking and working

[22] Cf. Suttles, 1960 a, 1960 b; Llewelly and Hoebel, 1941; Vayda, 1961; Vayda, Leeds, and Smith, 1961.

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distance of the gardens is too far from the village for effective or efficient exploitation. At this point a village or part of a village must move. Moving the villages involves decision-making with respect to time, new location, and so on. Plainly, moving a village involves a community decision. A community institution for handling the decision-making is necessary. Technologically speaking, the moving itself is not a community task and does not involve supervision and direction. Therefore, one would not expect the institution of decision-making to be a directive one, but a consultative one. Again this corresponds to the observed modes of action of the Yaruro chiefs. The chiefs' function is to facilitate the formation of the decisions of the community by funnelling and interpreting individuals' feelings and expressions to the rest of the members of the community.

In sum, I have presented a model of a form of ecology which, hypothetically, determines the limits within which any sort of chiefly functions may operate. This model, again hypothetically, is applicable to all cultures having the kind of technological and habitat characteristics and forms of surplus here described. I think the model applies particularly to cultures which grow root-crops such as manioc, which utilize no labor-concentrative techniques, such as irrigation, and for whose food resources notable seasonality is absent. Such cultures have been noted widely in tropical South America and also in Melanesia. In both areas, chiefly functions are notably limited as contrasted, say, with Circum-Caribbean corn-raising cultures with some irrigation and other intensive techniques [24] and with Polynesian high cultures with elaborate irrigation and other public works. [25] It should be noted, first, that the Yaruro were not far from these Circum-Caribbean chiefdoms and even show a number of trait similarities, and, second, that the Yaruro have been under Spanish acculturation, which has involved encouragement of chiefly functions, for probably 250 years. Yet, despite the pressures of both diffusion and acculturation to produce a more developed chieftaincy, the attenuated form described persists. The explanation of this persistence seems to me to be ecological. I suggest that the model of explanation presented here is based on a set of analytic dimensions — the characteristics of the technology, those of the habitat, those of the harvest surplus, and the interrelationships of these — which may be used for all cultures, but whose formal, systemic relations vary from culture to culture, or class of cultures to class of cultures, thus giving different models for different cultures or classes of cultures. By using such dimensions, one can account for cultural differences by means of a standard set of principles, thus facilitating genuine comparisons and generalizations.

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[24] Cf. Sturtevant, 1961; Reichel-Dolmatoff, 1961.
[25] Cf. Sahlins, 1958.

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